**Explore:**

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| Expectations:   * Working with your partner (person whose desk is touching yours) * Level 2 voice * Accountable Math talk! |

With your partner, choose one of the quadratic functions below and circle it or put a star next to it.

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| y = x2 y = -x2  y = -2x2 y = x2  y = x2 + 1 y = -x2 - 1 |

Create a table and graph for the function you’ve chosen. Then, answer the questions below in any order that you’d like. Record your answers next to the graph.

1. If you fold your graph in half, will one side exactly match the other? If so, where would the fold be? Answer this question by giving an x-value.
2. Do you think your conclusion about the fold will be true for all quadratic functions? Why or why not?
3. Is there a highest or lowest point on your graph? If so, where is it?
4. Do you think all quadratic functions will have a highest or lowest point? Why or why not?
5. Aside from the highest or lowest point, which other points on your graph do you think might be important to pay attention to? Why do you think they might be important?
6. Describe the shape of your graph in words, using as much detail as you can.

Choose two more quadratic functions from the list above which will be interesting to compare to your original function. Try to choose one that is as similar as possible to your original function, and one that is as different as possible from your original function.

Repeat questions 1, 3, 5, and 6 for both of your new functions.

Now that you’ve considered three different quadratic functions:

1. What conclusion do you think you can draw about the fold of all quadratic functions?
2. What conclusion do you think you can draw about the highest or lowest point of all quadratic functions?
3. What points do you think are important to pay attention to for all quadratic functions?
4. What do you think the graphs of all quadratic functions will have in common.